

# FLIGHT OUTPOST ADVENTURE

## Achievement Sampler #2

Use this sampler to complete some CSB Achievement at home. Your parent, another relative or a family friend can help you with the memory verses and the individual Achievements. When you are done, show your completed work to your Stockade Ranger. He can help you get the entire Outpost Adventure and earn the Patch and Honor Star.

**Print this pdf as a “Booklet” or “Multiple” using Adobe Reader.**

**You can obtain FLIGHT from:**

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### **Builder Memory Verse: Isaiah 40:29**

“He gives power to the faint, and to him who has no might he increases strength.”

### **Sentinel Memory Verse: Isaiah 40:28**

“Have you not known? Have you not heard? The Lord is the everlasting God, the Creator of the ends of the earth. He does not faint or grow weary; his understanding is unsearchable.”

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800.815.5573  
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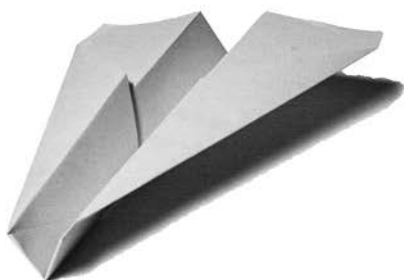
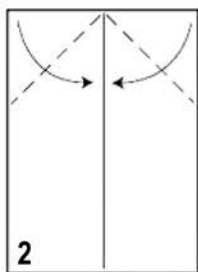
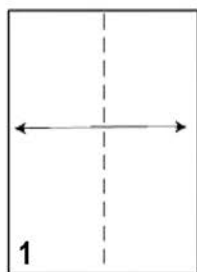
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# PAPER AIRPLANES

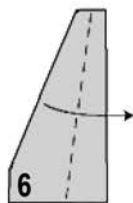
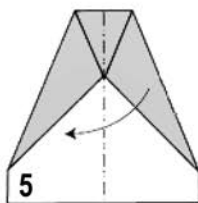
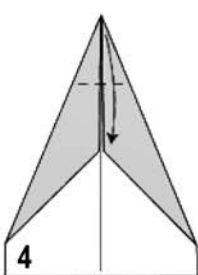
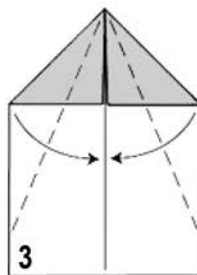


Paper planes are a lot of fun but their design is just as important as any full-size modern aircraft. Did you know that the Wright brothers built paper planes to test the properties of flight? That allowed them to build the very first powered, heavier-than-air, aircraft – the Wright Flyer.

**Make your own paper plane and tell your Ranger what it can do. After describing how it will fly (if it will go straight, curve, dive, loop, spin or roll) show him what your paper plane will actually do.**



**“THE PUG”**



Ask your Ranger to show you one of his favorites.

# TYPES OF AIRCRAFT



Can you identify all these aircraft types?  
**Draw a line from its image to its name.**  
If you have any trouble, ask your Ranger  
for help.



**BALLOON**  
**ROCKET**  
**HELICOPTER**  
**SPACEPLANE**  
**HANG GLIDER**



**GLIDER**  
**BIPLANE**

**JETLINER**

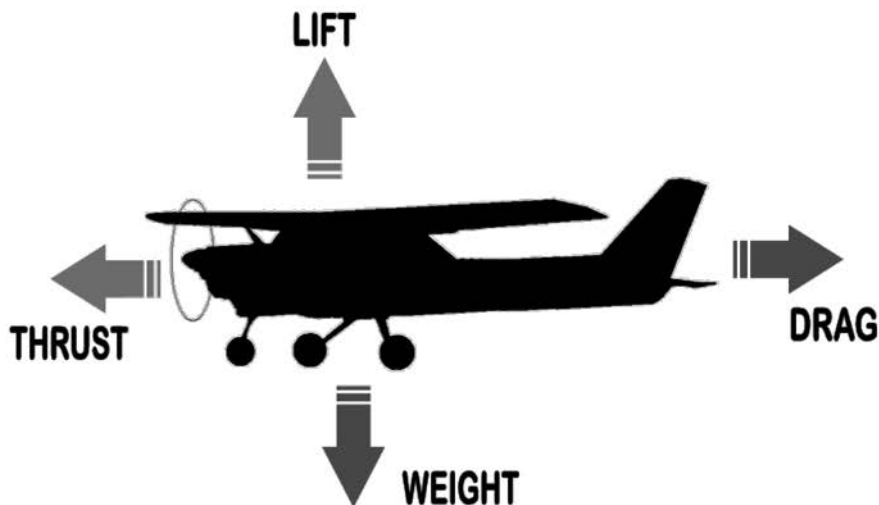
**JET FIGHTER**

**MONOPLANE**



# THE PRINCIPLES OF FLIGHT

There are four major forces which affect the flight of an object through air. They are weight, lift, thrust and drag.



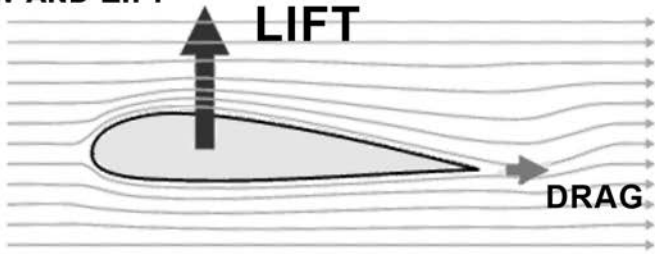
**WEIGHT** is the force of gravity that pulls something down to earth. To fly, an aircraft needs something to push against gravity.

**LIFT** is the force that moves something upward. For an aircraft, it must have more lift than weight. Lift for an airplane comes from its wings. A kite, though lightweight, gets its lift from wind energy. A balloon uses expanded gases (hot air, helium) to oppose the weight.

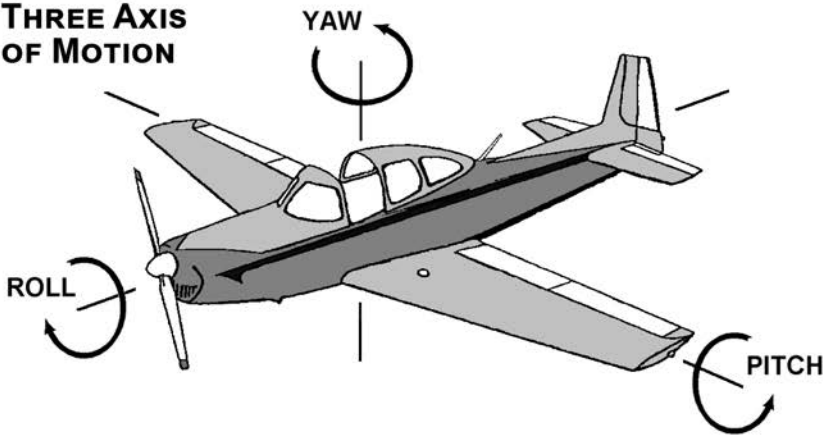
**THRUST** is the force that moves something forward. For an aircraft to keep moving forward, it must have more thrust than drag. A small airplane might get its thrust from a propeller. A large plane might get its thrust from jet engines. A glider trades altitude - potential energy - for its thrust.

**DRAG** is a force that tries to slow something down. It is the friction or resistance that makes it hard to move.

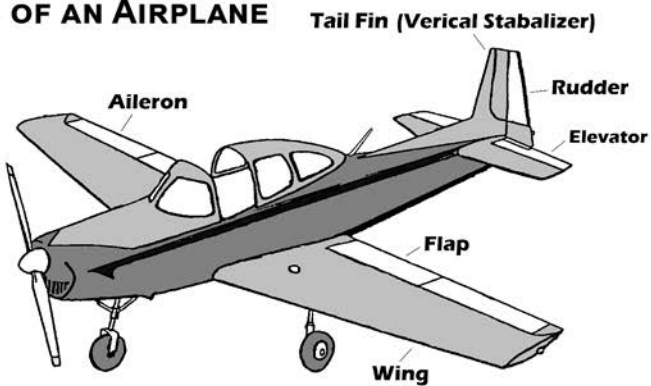
## AIRFLOW AND LIFT



## THREE AXIS OF MOTION

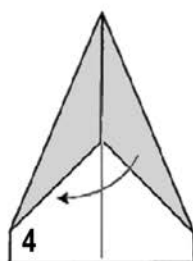
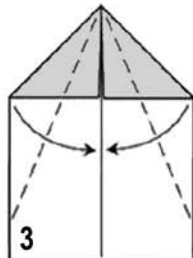
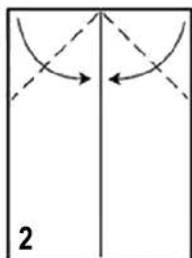
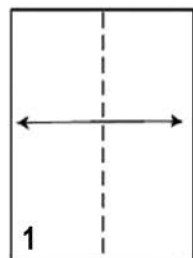


## PARTS OF AN AIRPLANE

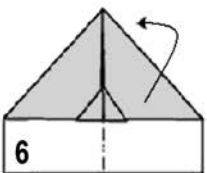
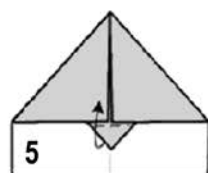
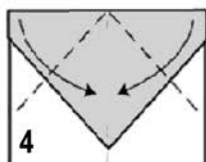
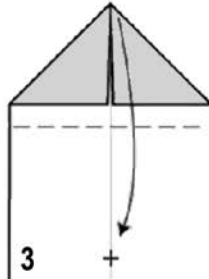
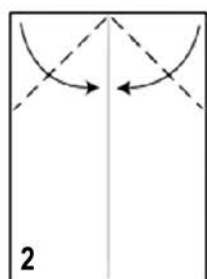
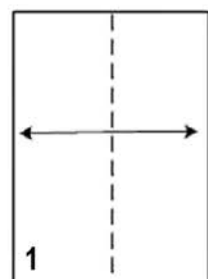
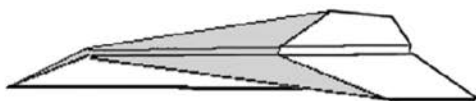




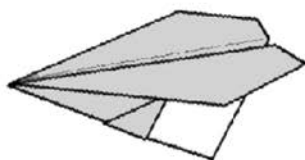
# PAPER AIRPLANE DESIGNS:



## “THE CLASSIC DART”



## “GLIDER”



These planes use standard letter paper, 8.5" x 11".  
FOLD ALONG THE DASHED LINES. FOLD IN THE DIRECTION OF THE ARROWS.

**1** A rectangular sheet of paper with a vertical dashed line down the center and two diagonal dashed lines from the top corners to the center line. Arrows point inward from the top corners.

**2** The paper is folded in half along the vertical dashed line. The top corners are folded inward along the diagonal dashed lines. The text "TURN OVER" is written above the diagram.

**3** The paper is turned over. The top corners are folded inward along the diagonal dashed lines.

**4** The top corners are folded inward along the diagonal dashed lines.

**5** The top corners are folded inward along the diagonal dashed lines.

**6** The top corners are folded inward along the diagonal dashed lines.

**"THE MIGHTY DUCK"**

The finished paper airplane is shown in a side profile, featuring a long, narrow body and a wide, flat tail.

**1** A rectangular sheet of paper with a diagonal dashed line from the bottom-left corner to the top-right corner. An arrow points inward from the top-right corner.

**2** The paper is folded in half along the diagonal dashed line. The top-right corner is folded inward along the dashed line.

**3** The top-right corner is folded inward along the dashed line.

**4** The top-right corner is folded inward along the dashed line.

**5** The top-right corner is folded inward along the dashed line.

**6** The top-right corner is folded inward along the dashed line.

**"THE RING"**

The finished paper airplane is shown in a side profile, featuring a long, narrow body and a wide, flat tail. A hand is shown holding the tail, and a label "TAPE" points to the tail section.

# MODEL PLANES

Build a plastic model of an aircraft (or if you like, a car, truck, ship, or railway rolling stock). Identify the five major parts that are visible on the model and know what they do.



Model and photo by (Mike) pmiaki on Flickr

## ***The Five Major Parts of the Model:***

**1.** \_\_\_\_\_

**2.** \_\_\_\_\_

**3.** \_\_\_\_\_

**4.** \_\_\_\_\_

**5.** \_\_\_\_\_

Describe the function of these five parts to your Ranger. Tell him why you like the model you've built.